

Ploughshare

Commercialisation for Impact

Sandy Fisher John Commercialisation Manager

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Innovation Made Real

Connecting Minds

Ploughshare helps bring government science and innovation to life for the good of society.

Built To Unlock Potential

Established in 2005, Ploughshare is a wholly-owned by the UK Ministry of Defence (MOD) and has exclusive rights to a unique portfolio of MOD-owned intellectual property developed in the Defence Science & Technology Laboratories (DSTL)



Innovation Made Real

Innovative Ecosystems

Ploughshare engages with industry to negotiate license deals and create spin-outs in order to turn government-developed innovation into impactful, real-life products and solutions that enhance and protect our Front Line Commands, provide new and cutting-edge solutions for our healthcare system, combat crime to make our streets safer and make our planet more sustainable.

From Innovation to Impact



How does Ploughshare support economic scaling?

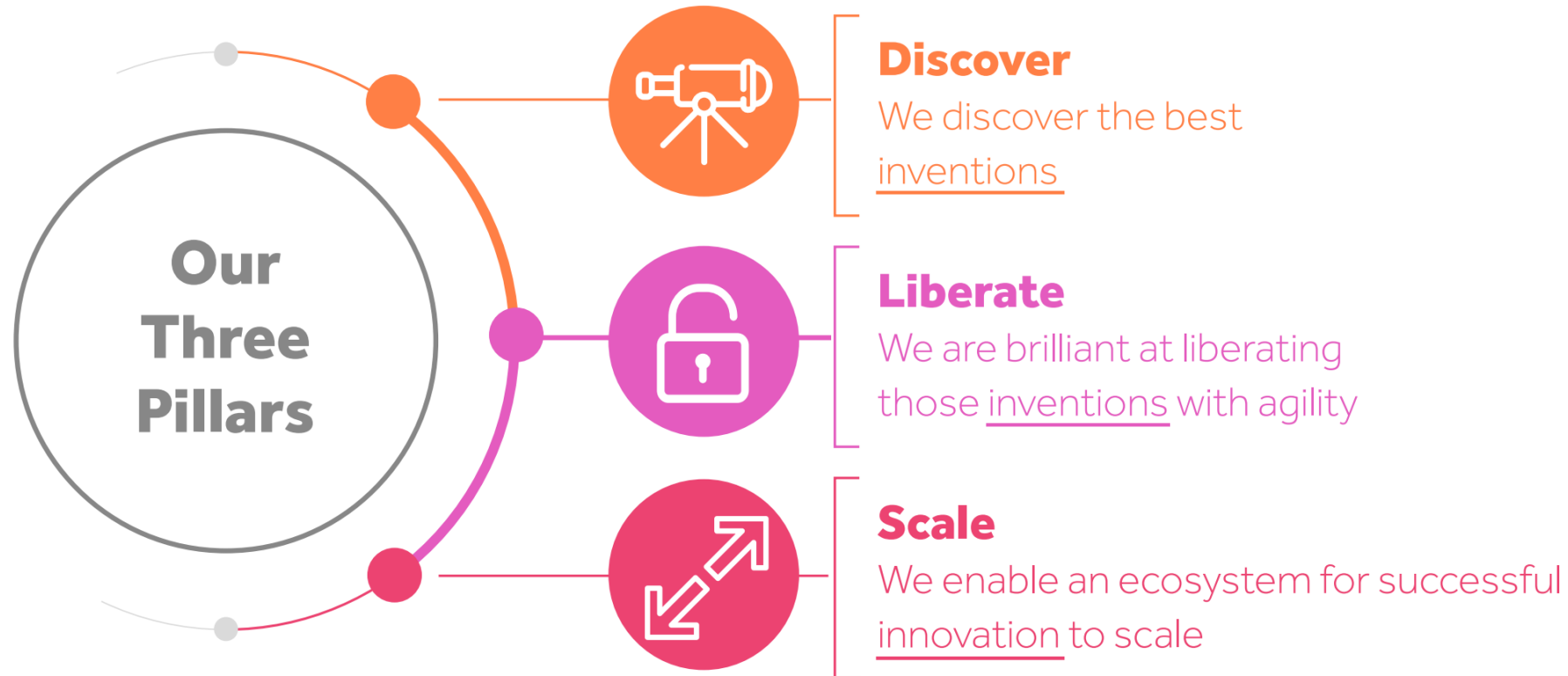
- **140** technologies to market
- **£120 million** Gross Value Added (GVA)
- **£16 million** income
- Over **£150 million** exports
- **17** spin-outs to date
- **500** new jobs
- Over **180 million** private equity investment in MOD innovation.

“It is vital we support and encourage the innovation of our leading scientists and engineers in the UK.

Ploughshare’s commercialisation capabilities enable us to continue to harness the use of new technologies which have real and beneficial impact in our society.”

Sir Patrick Vallance
Chief Scientific Advisor, UK
Government

From Invention to Impact



Invention vs. Innovation

A network diagram with various nodes and connections, including a glowing yellow lightbulb icon.

TO INVENT

IS TO

“create or design (something that has not existed before); be the originator of.”

TO INNOVATE

IS TO

“practically implement ideas, resulting in the introduction of new goods or services or improvement in offering goods or services.”

“The value of an idea lies in the using of it.” *Thomas Edison (1847 – 1931)*

An Innovation (and Impact!) Mindset

In the UK, we are GREAT at research!

- 💡 Three of the world's top 10 universities!
- 💡 4% of researchers
- 💡 7% of academic publications
- 💡 14% of highly cited academic publications in the world

Despite having less than 1% of the world's population!

...so, what's the problem?

How do we APPLY this this research to solve the problems that we face nationally and globally?

How do we convert research expertise into into real world benefits?

An Innovation (and Impact!) Mindset



An Innovation (and Impact!) Mindset

*"What does my research
mean in a wider
context?"*

*"What could we
(society) actually do
with it?"*



An Innovation (and Impact!) Mindset

Beyond (not instead of) publication
how can we exploit the results of
our research?

By thinking commercially, we can
enhance and sustain research
impact after funding ends!



Route to Commercialisation

So, you've got a great result (yay!)...now what?

To publish or not to publish...that is the question?



PAUSE

"What does my research mean in a wider context?"

"What could we (society) actually do with it?"

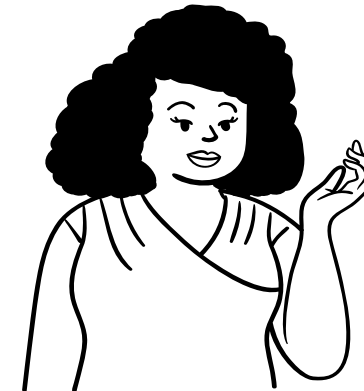
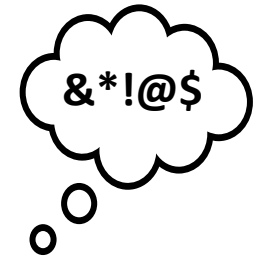
Route to Commercialisation



OK...GO



Market Discovery



Value Proposition

- For **target segment** who **need** but are struggling to **problem** our solution **name** is **solution description** that shows **needs are being met**. This means **benefit**. Unlike **alternative solution**, we **unique differentiator** because of **evidence**



Protect your idea! (then publish)

Commercialisation Pathways



Research collaboration

Licensing

Spin-out

Commercialisation Pathways

Research collaboration

Licensing

Spin-out



Helps to fund further development of the technology while providing valuable industry insight



Jointly managed under a collaborative agreement



Can include special provisions for the company to have first access to a license to commercialise the results (ie. an option to a license)

Commercialisation Pathways

Research collaboration

Licensing

Spin-out





- 💡 Product/capability can be introduced through existing company/companies with market access
- 💡 Inventors remain at institution
- 💡 Through licensing the institution retains ownership of the IP but can oversee development and commercialization
- 💡 Typically, fee and royalty generating

Commercialisation Pathways

Research collaboration

Licensing

Spin-out

-  Forming a new company to bring a product to market
-  Technology gets licensed into new company
-  Inventors may join the spin-out full or part-time
-  High risk but potentially high reward with equity stake in new company

Spin-out

Vs

Licensing

Disruptive 'Platform' technology with multiple applications

| Nature of Technology |

Incremental improvement to existing technology

Strong foundation, development stream and IP position i.e. Portfolio of technologies

| Strength of Technology Pipeline |

Isolated invention and lone patent

Complete product / system

| Completeness |

Component part of larger system

Multiple and Large

| Addressable Markets/applications |

Niche and Moderate

Open, High growth, Good margins, Concentrated customer base, Active M&A sector

| Market/industry attractiveness |

High entry barriers, Low growth, Strong competition, Fragmented customers, Unloved sector

New or Emergent Market

| Route to Market |

Existing market with well entrenched supply chains, distribution and competition

Active engagement with commercialization

| Investor interest |

No interest in supporting commercialization

Easy access to managers with track record and industry credibility. At least one inventor will join.

| Management Availability |

Difficult to identify and attract managers with relevant skills. Inventors not engaged

Ability to achieve break-even/scale within 3-7 years

| Timescale to payback/exit |

Very long timeframe to commercialise or market emergence e.g. drugs

Business can scale to produce the necessary return on the investment (but with risk)

| Potential for return |

Business only capable of producing moderate return (even at low risk)

Why Commercialise?

- 💡 A new challenge
- 💡 Return to inventors
- 💡 Making the most of public funding

Your research generating real world impact!

Want to learn more?

The Journal of the Parliamentary and Scientific Committee – All-Party Parliamentary Group

<https://www.potterclarkson.com/media/2832/spring-2023-sip.pdf>

THE OTHER PROBLEM WITH TECH TRANSFER



Dr Sara Holland
Partner | UK & European Patent
Attorney

There has been increasing discussion around problems with the transfer of technology from universities, and in particular with the spin-out process. The process is often very slow, with negotiations around terms such as the equity stake taken by the university sometimes causing investors to walk away, founders to get frustrated, and companies struggle to get off the ground.

This process will be looked at in the review recently commissioned by the Treasury, and headed up by Professor Irene Tracey and Dr Andrew

The current academic mind-set focuses on a drive to publish research to meet targets/career goals, rather than thinking "*what does my research mean in a wider context? What could we (society) actually do with it?*" i.e. thinking *inventively*. If we can shift this mindset and back it up with better education around what it actually takes to get that idea to have a real-world impact

I'm confident we will find we have so much more in our universities that our world desperately needs and that will push our science-superpower

But what does that mean?

This means that we are good at getting research into scientific journals, and are good at getting those articles cited by others.

Doing good science and disseminating it to the scientific community is a good thing. Tick.

What it does **not** mean is that we are good at doing something with that research.

What impact does publishing research in an obscure journal have on the lives of people in the UK, or for net zero and the planet?

Starting the Journey

- 💡 Talk to your TTO!
- 💡 Support Programs such as [ICURe](#) and [RAE Enterprise Fellowships](#)
- 💡 Online Resources – [Ploughshare's Spinout Playbook](#) and [RAE Entrepreneur's handbook](#)

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ABOUT ▾

DISCOVERY ▾

PLAYBOOK ▾

INVEST ▾

OUR IMPACT ▾

NEWS

CONTACT US

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Step 6:

Understanding your options



Stay in touch

ploughshare

Innovation made real

<https://ploughshare.co.uk/>

Sandy Fisher John PhD

Commercialisation Manager

sandy.fisher.john@ploughshare.co.uk

+44 (0)7827 252007